# EYE MOVEMENTS IN READING, PICTURE INSPECTION AND MUSIC READING – WHAT DO WE KNOW?

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## Background

While there is extensive literature on eye movements during the reading of a text or inspection of pictures (Rayner, 1995) there are only few reports about gaze behaviour during music reading (Lehmann, 2002). Yet musical sight reading implies an interesting experimental approach to the study of cognition, because vast amounts of input information must be handled and connected to complex output sequencing. This necessitates highly structured encoding as well as execution processes characterised by anticipation and expectation beyond the low level control of input features.

## Aims

This paper provides a critical assessment of existing eye movement research in music reading and compares music and text reading to arrive at new research questions.

## Contribution

In reading a text, WHERE decisions are mostly controlled by low level processes while WHEN decisions are more influenced by top down processes the longer the fixation durations last. In text reading, most data speak for a low level positioning process: non-optimal landing positions increase the probability of a second fixation on a word, for example. It is unknown if the perceptual span in music reading is more open to the vertical dimension while ordinary gaze progression is less predominant. Fixation durations are more influenced by comprehension i.e. matching to long term memory content, for example high frequency words need 242 ms and low frequency words 264 ms fixation duration. Regressions, i.e. leftward directed saccades in reading are rare and often found in difficult texts; perhaps a sign for the re-evaluation of expectations. Regressive saccades are more often seen in musical reading and mostly interpreted as an indicator of unusual time sharing processes.

## Conclusions

Possible new designs for future research in musical reading experiments are proposed.